

# Kids and Transportation Education Program of York County

- A Cross-Curriculum, K-12 Education Program

Program Description 2004-2005

An Education Program of the Maine Turnpike Authority and the Southern Maine Regional Planning Commission

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# Program Overview

## **Kids and Transportation Program of York County (KATYC)**

KATYC is a K-12 education program that uses transportation related themes to address multiple curriculum areas. The programs offered through KATYC are flexible in design and align with the Maine Learning Results. In addition to classroom presentations, KATYC also provides classes for educators and resources that teachers can use in the classroom. KATYC is sponsored by the Maine Turnpike Authority and located at the Southern Maine Regional Planning Commission.

## **Maine Learning Results**

KATYC believes that in order to have value in the classroom, we must align all offerings with the Maine Learning Results. To that end, all presentations, teaching resources and teacher classes are built to target identified Performance Indicators.

- All presentations are accompanied with a list of specific Performance Indicators addressed that day.
- Staff will work with teachers to develop appropriate assessment tasks.

## **Variety of Offerings**

Our goal is to help teachers provide their students with information that helps them understand the content of a given unit of study. We do not require that our staff have a presence in the classroom. Teachers, therefore, may ask us to present or may access the program for information that they themselves will integrate into the classroom. To this end, we offer assistance in different formats, including:

- Classroom Presentations
- Resources and Activities
- Access to Information

## **Free**

All class presentations and resources are free of charge.

## **Contact Information**

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# Resources & Activities

KATYC offers resources and activities for educators in various formats.

## **Local Map Kit**

The Local Map Kit is a map oriented teaching kit that includes dozens of maps and map tools for use in the classroom. The kit can be used to teach mapping skills and to support other learning activities. We are proud to announce that the Local Map Kit has garnered two awards. Kits have been developed for the following School Districts: Biddeford, Old Orchard Beach, Kittery, MSAD 71, Sanford and York.

## **State of Maine Map Kit**

The Maine Map Kit is our newest map kit and provides information on a statewide format. The Kit is comprised primarily of a collection of 8.5” x 11” overhead transparencies that overlay a State of Maine transparency base map. Each overlay depicts a certain theme. Themes include, but are not limited to, geology, economy, history, government and infrastructure. These maps can be downloaded directly from our website.

## **Field Trip- Wetland Restoration Project**

The Maine Turnpike Authority has developed a large wetland mitigation site in south Sanford. As part of the mitigation effort for the Turnpike Widening Project, this site provides a mixed habitat area on a 133-acre site. KATYC staff is available to discuss this project and to coordinate field trips to the site. Note: See page 11 for the corresponding class presentation that can be offered in conjunction with this field trip if appropriate.

## **Climate Change Backpack®**

The New England Science Center Collaborative (NESCC) has developed a teaching tool called the Climate Change Backpack®. The curriculum materials and activities fit into a daypack for use in classrooms and in the field. The lessons are designed to expand or contract according to the audience and available teaching time. The Climate Change Backpack® contains an extensive Presenters' Guide©, graphs, maps, experiments, group activities and a variety of props. KATYC has a backpack that teachers can borrow for use in the classroom. Backpacks are also available from the Wells Estuarine Reserve and the Maine Department of Environmental Protection. Contact us for information on how to reserve a backpack for your classroom.

## **Alternative Fuels Debate**

The Alternative Fuels Debate Game includes topic relevant information to allow students the opportunity to learn about, and debate the merits of alternative fuels. The exercise fosters reading, research, teamwork and debate skills. The activity can be run in as little as 80 minutes. The Alternative Fuels Debate was developed by the National Energy Education Development Project. Staff at the Maine Energy Education Program (MEEP), Department of Environmental Protection (DEP) and the Kids and Transportation Programs are available to help run the event in your classroom.

## **Newsletter**

*Going Places* is published 3 times during the school year. Each issue includes information on a variety of topics, teaching ideas and program information. Newsletters are reviewed and approved by Superintendents before being distributed to teachers.

## **Website**

The KATYC website, [www.katyc.org](http://www.katyc.org), provides information about the Program. Visitors can learn about new resources or upcoming events, download learning activities, or launch to other sites from our extensive links page.

## **Classes for Educators**

KATYC provides summer classes and after school classes for educators. Class themes are varied and provide information and material that can be brought back to the classroom. Participants receive continuing education units for participation in the Summer Institute for Educator and contact hours for after school classes.

## **Classroom Presentation Information**

All classroom presentations and related information offered by staff can be made available to teachers for their own use.

## **Hybrid Vehicle**

The Program has a Honda Civic Hybrid available as a teaching tool. The Hybrid uses unleaded gasoline but also generates electricity while the car is coasting or braking. The electricity is then used to assist the engine. The result is improved gas mileage and a reduction in the amount of pollution that would otherwise be generated by a comparable "gas only" Civic. The Hybrid is a good tool for us to use when discussing alternative vehicles/fuels and marketing/design strategies.

# Classroom Presentations

Classroom presentations are a major component of the KATYC Program. We have developed a variety of presentations that directly address the *Career Preparation, Science and Technology, Social Studies* and *Visual and Performing Arts* curriculum areas.

As life events are seldom encompassed in a single discipline, we have endeavored to construct our presentations to be cross-curriculum. While each presentation is built to target a primary Content Standard, they also touch upon different Performance Indicators.

The presentations topics are varied and run the K-12 spectrum.

The presentations can be structured to run as a single period event or a multiple period/day program. For multiple period presentations, we are happy to lead each period or just intro the topic and let the teacher present the remaining information.

Following is a summary presentation topic list followed by a more detailed description of each presentation.

# Presentation Summary

## **Career Preparation**

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## **Science and Technology**

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## **Social Studies**

Mapping Skills	(3 <sup>rd</sup> – 4 <sup>th</sup> )	Page 13
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## **Visual and Performing Arts**

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**Topic:** **A Day in the Life**

Grade Level: K-2

Standard Label: **Integrated and Applied Learning**

Content Standard: Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

Performance Indicator: 1. Demonstrate the effects of technology on where people choose to live, how they communicate, how they travel, and how they acquire goods and services.

Overview: This presentation helps students realize the extent to which technology is involved in their daily lives. Where they live, how they get to school, where their meals come from are all effected by technology. We focus on transportation, ranging from the very cool to the very mundane, to demonstrate how technology is a part of their day.

**Topic:** **Day Tripper**

Grade Level: 5-8

Standard Label: **Balancing Responsibilities**

Content Standard: Students will acquire and apply skills/concepts required to balance personal, family, community and work responsibilities.

Performance Indicator: 1. Identify how critical factors such as history, the environment, the economy or personal characteristics may affect individual and family choices.

3. Demonstrate an understanding of budgeting and the use of financial tools and services.

Overview: Choice is easy when options are limited. However, when competing needs and desires exist at the same time that multiple options exist, choice is far from easy. We discuss the power of choice and introduce scenarios that require the students to weigh their options against their needs. We conduct an in-class exercise in which students make decisions involving transportation while trying to satisfy conflicting group objectives. The students end the activity by reporting to the class the reasons behind their decisions.

**Topic: Newton's Laws of Motion**

Grade Level: 5-8

Standard Label: **Motion**

Content Standard: Students will understand the motion of objects and how forces can change that motion.

Performance Indicator: 1. Describe the motion of objects using knowledge of Newton's Laws of Motion

Overview: This presentation addresses all three of Newton's Laws and uses a variety of props to drive home each aspect of each Law. This presentation can be adjusted to serve either as an introduction to a unit on motion or as a wrap-up presentation. There is quite a bit of interaction with the students, including experiments, which allows this to be both an informative and fun presentation.

**Topic: The Global E's of Transportation (Environment & Economics)**

Grade Level: 5-8

Standard Label: **Economics** - International Trade and Global Interdependence

Content Standard: Students will understand the patterns and results of international trade.

Performance Indicator: 1. Describe how changes in transportation and communication technologies have affected trade over time.

Standard Label: **Implications of Science and Technology**

Content Standard: Students will understand the historical, social, economic, environmental and ethical implications of science and technology.

Performance Indicator: 7. Explain the connections between industry, natural resources, population and economic development

Overview: This presentation explores the interconnectedness of the global economy and how the landscape of trade has changed over time.

**Topic: Climate Change**

Grade Level: 5-12

Standard Label: **The Earth**

Content Standard: Students will gain knowledge about the earth and the processes that change it.

Performance Indicator: (5-8) 4. Describe factors that can cause short-term and long-term changes to the earth.  
(9-12) 2. Analyze potential effects of changes in the earth's oceans and atmosphere.

Standard Label: **Implications of Science and Technology**

Content Standard: Students will understand the historical, social, economic, environmental and ethical implications of science and technology.

Performance Indicator: (5-8) 7. Explain the connections between industry, natural resources, population and economic development  
(9-12) 2. Demonstrate the importance of resource management, controlling environmental impacts and maintaining natural ecosystems.

Overview: We begin by differentiating between the Greenhouse Effect, Global Warming and Climate Change. We end by discussing the potential impacts of climate change. Experiments are an important aspect of this presentation and help to explain factors such as thermal expansion, and the greenhouse effect. We address topics such as Weather v. Climate, the Great Ocean Current, Regional v. Global Impacts, Proxy Data and other components of this very important subject.

## **Topic: Environmental Implications – Wetlands**

Grade Level: 5-8

Standard Label: **Implications of Science and Technology**

Content Standard: Students will understand the historical, social, economic, environmental and ethical implications of science and technology.

Performance Indicator: 1. Research and evaluate the social and environmental impacts of scientific and technological developments.  
6. Give examples of actions which may have expected or unexpected consequences that may be positive, negative or both.

Overview: What role do wetlands play in our lives? Should we value them more than we do? We'll discuss wetland values and then explore how transportation and settlement have impacted these critical natural areas.

**Field trip option:** This presentation can be structured to include a field trip to a recently created wetland where students can explore the elements of a wetland and conduct fieldwork.

## **Topic: Transportation Timeline**

Grade Level: 5-8

Standard Label: **Implications of Science and Technology**

Content Standard: Students will understand the historical, social, economic, environmental and ethical implications of science and technology.

Performance Indicator: 1. Research and evaluate the social and environmental impacts of scientific and technological developments.  
6. Give examples of actions which may have expected or unexpected consequences that may be positive, negative, or both

Overview: Changes in transportation technology have provided benefits and drawbacks depending upon the frame of reference. We will present a timeline of transportation since the late 1800's and discuss how changes in transportation technology have had both positive and negative ramifications.

**Topic:**        **Alternative Fuels and Vehicles**

Grade Level:        5-8

Standard Label:        **Energy**

Content Standard:        Students will understand concepts of energy.

Performance Indicator:        5. Categorize energy sources as renewable or non-renewable and compare how these sources are used by humans.

Overview:        This presentation explores the benefits and drawbacks (environmental, financial, convenience, etc) of using alternative fuels and transportation. Examples of fuels, a hybrid vehicle, an electric vehicle and a model fuel cell car are all available for use in this presentation. The presentation also includes the option of conducting an alternative fuels debate developed by the National Energy Education Development Project.

**Topic:** **Mapping Skills**

Grade Level: 3-4

Standard Label: **Geography** - Skills and Tools

Content Standard: Students will know how to construct and interpret maps and use globes and other geographical tools to locate and derive information about people, places, regions and environments.

Performance Indicator: 1. Construct and compare maps of Maine, the United States and regions of the world to interpret geographical features and draw conclusions about physical patterns.

Overview: If a picture paints a thousand words then a map definitely makes for good reading. How does a map portray the real world? What are the components? Why do all maps lie? We will use local maps and aerial photographs to lead this discussion and classroom activities.

**Topic:** **The Geography of Community**

Grade Level: K-8

Standard Label: **Geography** - Human Interaction with Environments

Content Standard: Students will understand and analyze the relationships among people and their physical environments

Performance Indicator: (K-2) 1. Describe the human and physical characteristics of the immediate environment.

(3-4) 1. Demonstrate an understanding of why certain areas of the world are more densely populated than others.  
2. Explain ways in which communities reflect the backgrounds of their inhabitants.  
3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains activities.

(5-8) 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.  
4. Demonstrate how society changes as a result of concentrated settlement.

Overview: What is community? What is the relationship between the physical environment and the community? We will discuss how the community is more than just a collection of people but rather an interplay of various factors. We will review geography principles and use maps, aerial photographs and other tools as part of the presentation.

**Topic:** **Land Use & Change Over Time**

Grade Level: 5-12

Standard Label: **Geography** - Human Interaction with Environments

Content Standard: Students will understand and analyze the relationships among people and their physical environments

Performance Indicator: (5-8) 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.  
4. Demonstrate how society changes as a result of concentrated settlement.

(9-12) 1. Explain factors which shape places and regions over time.

Overview: What is land use planning and how does it shape or landscape? The presentation discusses the purpose and process of planning. We explore concepts such as “the tragedy of the commons”, change over time and public vs. private rights. We draw upon example from the community to allow the students a chance to identify with the issues discussed in class.

**Topic:** **The Global E’s of Transportation (Environment & Economics)**

Grade Level: 5-8

Standard Label: **Economics** - International Trade and Global Interdependence

Content Standard: Students will understand the patterns and results of international trade.

Performance Indicator: 1. Describe how changes in transportation and communication technologies have affected trade over time.

Standard Label: **Implications of Science and Technology**

Content Standard: Students will understand the historical, social, economic, environmental and ethical implications of science and technology.

Performance Indicator: 7. Explain the connections between industry, natural resources, population and economic development

Overview: This presentation explores the interconnectedness of the global economy and how the landscape of trade has changed over time.

# Visual and Performing Arts

**Topic:** **Influencing Choice**

Grade Level: 3-8

Standard Label: **Criticism and Aesthetics**

Content Standard: Students will reflect upon and assess the characteristics and merits of art works.

Performance Indicator: (3-4) 7. Investigate how the elements, principles and structures of the arts can be manipulated by communication media to persuade and to influence.

(5-8) 4. Compare and contrast the effectiveness of selected media, techniques and processes in communicating ideas.

Overview: Why do we buy what we buy? How are design principles used in the market place? In this presentation, we explore how advertising and design plays an important role in shaping our purchasing decisions. We use examples and have the class design a marketing plan for a product or service.